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ABSTRACT

An analysis is presented of the environmental impacts of replacing the Winnett School District's existing oil-fired heating system with a new coal-fired heating system with funds provided from a grant under the Institutional Conservation Program. The report first covers the background and need for action, along with the alternative actions considered. This is followed by a description of the existing environment, including the air and water quality, ecological resources, floodplains and wetlands, land use, visual and recreational resources, and historic and archaeological resources. Next, the environmental effects of the proposed action on these areas are addressed, including noise, safety and health, and transportation. Appendices include figures, and state and federal agency correspondence regarding the project. (Contains 17 references.) (GR)

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ENVIRONMENTAL ASSESSMENT:

WINNETT SCHOOL DISTRICT BOILER REPLACEMENT PROJECT

DOE/EA-0923

The U.S. Department of Energy

Institutional Conservation Program

1.0. PURPOSE AND NEED FOR ACTION

This environmental assessment (Assessment) analyses the environmental impacts of replacing the Winnett School District (School) complex's existing oil-fired heating system with a new coal-fired heating system with funds provided from a grant under the Institutional Conservation Program. This Assessment has been prepared in accordance with the provisions of the National Environmental Policy Act (NEPA), as amended; the Council on Environmental Quality's regulations codified at 40 CFR Parts 1500-1508; the Departments's Implementing Procedures and Guidelines Revocation codified at 10 CFR 1021; DOE Order 5440.1E; and the May 1993 "Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements," prepared by the

Department's office of NEPA Oversight.

Under the Institutional Conservation Programs, created by the National Energy Conservation Policy Act (PL 95-619), the Department is authorized to encourage energy conservation by providing funding for up to 50 percent of the costs of installation of qualified energy conservation measures by entities such as schools, hospitals, and other buildings owned by local governments. This proposed action to fund partially the installation of a new coal-fired heating system for the Winnett School District is part of this en4rgy conservation program.

Submitted on November 25, 1991, the School's Institutional Conservation Program grant application has been evaluated for grant assistance under the Department's applicable Institutional Conservation Programs guidelines. The District's buildings were evaluated under the Technical Assistance Program Assistance) requirements pursuant to 10 CFR 455.42; these reports were prepared by qualified Assistance program analysts in accordance with 10 CFR 455.90.1,2,3

There are distinct advantages to purchasing and installing a new coal-fired system, including the following:

- Converting to a more efficient system makes the School eligible for Institutional Conservation Programs grant monies.

- Coal provides a high British thermal unit (Btu) value at a low cost: coal costs roughly $2.64 per million Btu, while fuel oil costs $7.61 per million Btu.3 Further, the cost of coal has been relatively stable, while the cost of fuel oil is subject to variability. The District anticipates an annual net energy cost savings of $6,545 per year with the proposed conversion and a simple pay-back period of 9.5 years.3 Use of such a more economical, efficient fuel source would be consistent with the National Energy Strategy and would help the school reduce its school operating

expenditures.

- Use of coal as a fuel also is consistent with the National Energy Strategy goal of reducing U.S. dependency on oil. It also would create a new market for local coal.

- A new oil-fired system would include costs associated with installing, maintaining and operating a new, permanent fuel oil storage and fuel supply system in compliance with state regulations implementing and supplementing the federal underground storage tank program (Administrative Rules of Montana (ARM) 16.45.201 - 16.45.205). The District presently lacks adequate fuel oil storage facilities.

2.0 BACKGROUND

Winnett is located in central Montana (see Appendix A, Figure 1). The school complex lies within the southern portion of the city of Winnett (see Appendix A, Figure 2). The property occupies just over 0.8 hectares (2.1 acres); the total area of the building complex (see Appendix A, Figure 3) is just over 2,925 square meters (31,502 square feet). The estimated remaining useful life of the complex is 40 years.

Under the present District heating system, the elementary school building is heated by a hot-water boiler equipped with a forced-draft burner fired with Number 2 fuel oil producing up to 1.55 million Btu per hour (Btu/hr). This boiler is approximately 20 years old and is at the half-way point of its useful life. The high school and its adjoining shop are heated with steam supplied by another boiler also fired with Number 2 fuel oil producing 0.6 million Btu/hr;

this boiler is roughly 40 years old and nearing the end of its useful life. Both boilers have relatively low combustion efficiencies, ranging from 75-78 percent with stand-by losses. They would be replaced by the proposed coal-fired system, which, on the other hand, would have a combustion efficiency of between 80-85 percent. Although it would generate fewer Btus than the present system (1.24 million Btus/hour versus 1.65 million Btu/hour), the new system as proposed would be adequate to meet the school complex's heat requirements.

The existing boilers were fueled by oil stored in an on-site underground storage tank (see Appendix A, Figure 3). As a result of leakage from the underground storage tank, soil beneath the tank was contaminated with fuel oil. To comply with ARM 16.45.401, the District investigated and reported upon the leakages and removed the underground storage tank in 1992. Samples from one of two monitoring wells installed to measure soil gas levels around the tank indicated fuel oil contamination to a depth of approximately 4 meters (13 feet). The second well was found to be free of contamination. In 1992, the District removed roughly 4.5 cubic meters (6 cubic yards) of contaminated soil from the site of the removed tank. The excavated soil was disposed of at a licensed county landfarm in accordance with state regulations. Site closure was confirmed by a July 28, 1992, letter from the Montana Department of Health and Environmental Sciences to the Winnett School District.4

Removal of the underground storage tank has forced the District to implement a short-term plan to heat the school complex. For the 1992-1993 heating season, the District set up a temporary 9,100-liter (2,400-gallon) above-ground storage tank and a buried PVC pipe to supply the present boilers. Installation and operation of the above-ground storage tank and pipe is in compliance with all applicable regulations (ARM 16.45.201 - 16.45.205 and the Uniform Fire Code adopted by the State Fire Marshal at ARM 23.7.111).

3.0 PROPOSED ACTION AND ALTERNATIVES

3.1 The Proposed Action

The proposed action would involve the cost-shared purchase and installation of a coal-fired heating system. The proposed coal-fired system would be a completely self-contained, closed-loop system. The proposed action would involve the following activities:

- Purchase and installation a 1.5 million Btu/hr-input, low-steam coal-fired boiler, heat exchanger, and piping necessary to connect the new boiler to steam lines in the school complex.5

- Purchase and erect a 204-square meter (2,200-square foot) prefabricated metal maintenance shed to house the new boiler system and for storing the WSD maintenance equipment. This shed would be constructed on the school complex's existing gravel parking lot.

- Purchase a covered bin of approximately 40 tons's capacity for coal storage.

- Purchase a covered wheeled bin of approximately 4 tons' capacity for temporary storage of coal ash pending its pick-up for disposal.

- Encapsulate and seal the present oil-fired boiler and associated activities under asbestos abatement measures codified at ARM 16.42.321 for the High School.

Appendix A, Figure 3 illustrates the proposed action and its physical relationship to the school complex. The construction/installation activities

would take approximately two months to complete. Both of the existing boilers would be replaced as part of the proposed action. The District does not plan to remove the two boilers, particularly the one in the High School that has asbestos abatement measures associated with its shutdown. Keeping both existing oil-fired boilers in-place is the reason the District proposes to purchase and erect the prefabricated metal shed to house the new coal-fired boiler. Piping for the proposed new system would be run underground from the new boiler to the schools.

The School would obtain subbituminous coal from a mine located near Roundup, Montana, about 72 kilometers (45 miles) south of Winnett. Coal would be delivered to the School complex by truck. Coal would be stored in a covered bin and auger-fed to the boiler, where it would be crushed and injected. An induced-draft fan would supply air to produce complete combustion within the where it would be crushed and injected. An induced-draft fan would supply air to produce complete combustion within the boiler. Ash would be removed by another auger to a wheeled, covered ash bin. The ash either would be recycled as a construction material or disposed of in accordance with state and federal requirements in an approved Class II landfill pursuant to requirements codified in ARM 16.14.401 and 16.14.501, et. seq.

The choice of coal as fuel for the District's heating system offers the advantages of being available within a relatively short distance from Winnett and of providing a high Btu value at low cost ($2.64 per million Btu versus the current $7.61 per million Btu for fuel oil3). Further, coal can be stored in greater quantities than can oil, better providing against such contingencies as unpredictable weather which often hamper timely delivery of fuel oil. The main disadvantage of using a coal-fired system would be an increase in air emissions and the generation of bottom ash waste requiring disposal. The air emissions that would be released by the proposed action are shown in Table 1 on Page 10.

As noted above, the new boiler system would be installed in a 204-square meter (2,200-square foot) metal shed to be erected on unused portions of the school

complex's existing gravel parking lot. Upon completion of the shed and installation of the proposed new boiler system, the area around the building would revert to its original use as a parking lot.

Installing the proposed new heating system's boiler would require disturbing, encapsulating, and/or removing small amounts of asbestos from present steam lines in the high school's mechanical room. Any asbestos management activities would be accomplished in compliance with ARM 16.42.321. In May 1992, the school complex underwent certification and inspection resulting in a finding of compliance with the District asbestos abatement plan.6

3.2 Alternative Actions

3.2.1 Purchase of New Oil-Fired Boiler --

Replacement of the existing system with a new oil-fired system was analyzed and eliminated from consideration for several reasons, including: coal provides a high Btu value at a lower cost; use of coal as a fuel is consistent with the National Energy Strategy goal of reducing United States dependency on oil; continued use of fuel oil would require replacement of the temporary storage tank and pipeline; and, continued use of fuel oil would neither create a new market for local coal nor address the Schools concerns over escalating heating costs.

3.2.2 Natural Gas as an Alternative Fuel --

This option was not analyzed because there exist no public utilities or private firms for supplying natural gas to the Winnett area.2

3.2.3 Propane Gas as an Alternative Fuel --

Propane is a natural gas substitute available locally. However, this alternative was analyzed and eliminated for several reasons. Siting propane storage tanks within a school complex would increase insurance liability. Since propane delivery would be by truck and more frequent than for coal, inclement weather could delay fuel shipments, raising questions about the reliability of this fuel source. Coal, on the other hand, can be stockpiled to avoid weather-related disruptions, which is of particular concern because the school complex has no back-up heating system. Finally, propane is much less cost-effective than coal: local market price for propane is $8.15 per million Btu (based on an average price of $0.75/gallon and 92,000 Btu/gallon), while coal costs $2.64 per million Btu.3,7

3.2.4 Conversion to Electric Heat --

Conversion to electric heat was analyzed as an alternative but was eliminated from consideration because the expense of replacing the entire system and the costs of this heating source would not make it a reasonable alternative.

3.2.5 Conversion to Heating from Solar, Wind, and Geothermal Energy --

Solar, wind, and geothermal heating also were analyzed and eliminated from consideration. For active solar heating, the costs of extensive mechanical and structural retrofitting would make the potential payback period excessive.2 While advances in wind energy technology have been attained, this technology is not yet a competitive resource in many areas of the country, including the Winnett region. There are no geothermal energy sources within the Winnett region.2,8

3.3 The No-Action Alternative

Under the no-action alternative, the grant application would be denied. No DOE monies would go toward purchase and installation of a new coal-fired system at the District complex. The potential benefits derived from installation of this system would not be realized under the Program, including improved combustion efficiency, reduced heating costs, reduced consumption of oil, and expanding a local market for coal. The benefits and impacts of a new system eventually would be realized since the school would need someday to replace the existing system before it fails. Non-cost-shared payment for the system would place an additional financial burden on the District; no other sources of funding are available to the School.

4.0 DESCRIPTION OF EXISTING ENVIRONMENT

4.1 Air Quality and Climate

Winnett is located in Montana Air Quality Control Region 140, which includes twelve counties of south-central Montana. Based on the most recent air quality summary available, most areas within the region -- including Petroleum County, where Winnett is located -- are in attainment for all criteria pollutants (ARM 16.8.811-.822).9

The climate within this area is characterized as semi-arid: cold dry winter,

cool wet spring, and warm summer. Prevailing winds in the area are from the north to the south. Dispersion is generally good. There are no major point sources of air contaminants located in Petroleum County. Existing nonpoint contaminants are those associated with agricultural production, such as dust. The air quality in Winnett is rated as good.

4.2 Ecological Resources

The District's school complex has been in use for over 40 years and has been disturbed extensively. Consequently, the site does not provide habitat for animal or plant communities. Based on consultation with the U.S. Fish and Wildlife Service and the Montana Department of Fish, Wildlife and Parks (see Appendix A), no federal- or state-listed threatened, endangered, or rare plant or animal or critical habitat is present on the site.

4.3 Water Quality

No surface waters cross the site of the proposed action. The nearest surface water to the site is Mc Donald Creek, located about 0.4 kilometer (0.25 mile) south and east of the site boundary. There also is an irrigation ditch located about 0.8 kilometer (0.5 mile) north of the site boundary.

Groundwater flow is toward the southeast. The depth of shallow ground waters is 9-10 meters (30-35 feet), as measured by numerous irrigation wells. Water of sufficient quality for drinking normally is found at greater depths; the two public water supply wells for the City of Winnett, which supplies the District, obtain water from a depth of 655 meters (2,150 feet).10

4.4 Floodplains and Wetlands

The site of the proposed action is roughly 6 meters (20 feet) above the estimated 100-year floodplain. No wetlands are located within the site boundary. The nearest wetland to the site is associated with Mc Donald Creek and is located roughly 0.65 kilometer (0.4 mile) beyond the school complex site boundary.

4.5 Land Use

Winnett is located within a rural agricultural area of Montana. Much of the land surrounding Winnett is rangeland. Dryland cultivation of wheat and barley occurs on benchlands located south and east of town. Irrigated crops, primarily alfalfa hay, is grown on lands along Mc Donald Creek.

The site is located within a residential neighborhood within the city limits of Winnett. This neighborhood consists of wood frame houses and mobile homes. Houses are widely spaced within a city block, averaging about 6 per block. The nearest residence to the site is at a distance of 60-90 meters (200-300 feet).

The School building complex occupies over 0.8 hectares (2.1 acres) within the city limits of the City of Winnett. Construction and operation of the proposed action would occur within the confines of the existing site. No additional lands are required for the proposed action. No prime, unique, or important farmlands are present at the site.

4.6 Visual and Recreational Resources

Views from the site are mostly open. The terrain is flat to gently sloping, except for sandstone bluffs found roughly 1.6 kilometer (1 mile) east and south

of the site.

The only recreational area involved with the site is the elementary school's recess yard, which is part of the existing school complex parking lot. As illustrated in Appendix A, Figure 3, the yard and its facilities are on the west and northwest sides of the complex. The closest components of the recess yard to the proposed action, a basketball court and a log gym set, are separated from the location of the proposed action by the parking lot proper. Otherwise, there are no public or private recreation sites or trails on the site.

4.7 Historic and Archaeological Resources

There are no resources of archeological significance, including Native American burial grounds or sacred use sites, in the vicinity of the proposed action. Due to the young age of the building affected and the nature of the boiler replacement project, the proposed action qualifies for exclusion from review under provisions of Section 3(1) and (2A) of the Programmatic Memorandum of Agreement among the United States Department of Energy, National Conference of State Historic Preservation Offices and the Advisory Council on Historic Preservation (June 7, 1984).11

4.8 Socio-economics

Given the small size of the construction and operations work force for the proposed action, a socio-economic profile of the Winnett region is not included in this EA. Area businesses will provide the small workforce required for the proposed action.

There are four Indian reservations in the eastern half of the State. The southern boundary of the Fort Belknap Indian Reservation is approximately 100

miles due north of Winnett; the adjoining North Cheyene Indian Reservation are located approximately 150 miles due south of Winnett; and the southern boundary of the Fort Peck Indian Reservation is approximately 150 miles northeast of Winnett.

5.0 ENVIRONMENTAL EFFECTS OF PROPOSED ACTION

5.1 Air Quality

During construction, there would be emissions of small quantities of fugitive dust or occasional smoke. These emissions would be generated by 1 to 2 vehicles per day transporting personnel to and from the site and by engines powering equipment. Although no calculations have been made, all emissions are expected to be small in quantity and limited in duration. The traffic increase would be minor compared with current traffic at the complex; any emissions would be short-term and localized. Small quantities of fugitive dust emissions might be produced, but these would be temporary and mitigated through appropriate control measures, e.g., spraying water for dust control.

While the proposed action would be a source of new air emissions, the coal-fired boiler is sized at 1.55 million Btu/hour, well below the lower limit for facilities of this type requiring review under Montana air quality permit regulations, which implement the Federal and Montana Clean Air Acts (ARM 16.8.1101 - 16.8.1118). Coal fuel-burning equipment with a heat input below 5 million BTu/hr is granted an exemption due to the low level of impacts for facilities of this size (ARM< 16.8.1102 (a)(iii)). Furthermore, emissions from

the proposed action in combination with other sources would neither cause nor contribute to violations of Montana Ambient Air Quality Statnds. Finally the proposed coal-fired boiler's closed-loop system would prevent additional air quality impacts.

When compared to the current oil-fired system, operation of the new boiler system would result in increased air emissions. A comparison was performed by the Montana Department of NaturalResoureces and Conservation cooperativeluy with the Air Quality Bureau of the Montana Department of Health and Evvironmental Sciences under the Montana Air Quality Program, as approved by the Environmental Protection Agency (Agency), of the emissions from te existing oil-fired system with those from the proposed actions's coal-fired system. The comparison, utilizing such sources as the Agency's AP-42 Emissions Data, projected estimates developed in the absence of a test burn. Table 1 summarizes the results of this comparison, which indicate that:

- A coal furnace increase emissions above those currently released by the oil-fired furnaces.

- Maximum particulate emissions from coal combustion at the District are predicted to be approximately one-half ton per year, a level of emission having a negligible effect on the particulate load in the town and surrounding area.

- Although higher than those from the present system, maximum predicted sulfur emissions from the proposed boiler are low -- below levels considered in long-term studies of "low-level" sulfur dioxide emissions to contribute to effects on vegetation and wildlife.12,13

The proposed project would release less than 180 tons/year of carbon dioxide from a stack 35 feet high. Based on the burning of anthracite coal, this value represents an extreme worst-case emission level. Further, this amount of carbon dioxide is negligible in comparison to the estimated annual total global carbon dioxide emission rate of 2.38x1010 tons.14 In comparixon to the current ;system, the proposed action will not significantly increase the amount of carbon dioxide released in the Winnett area. While insignificant in terms of the overall combustion of fossil fuels and emissions of carbon dioxide by all fossil-fueled devices, the proposed action, however, still would add to any global warming problem that may exist.

A more detailed study of air impacts (concentrations and exposures) cannot be made without a dispersion model, which would require approximately one year's accumulation of baseline data. Due to the proposed action's exemption from further review under Montana State law, development of a dispersion model is not planned.

Under the No-Action alternative, the oil-fired system presently in operation would continue to operate until the aging boiler at the high school gave out. The resultant emissions are also given in Table 1. As with the proposed action, the impacts of the No-Action alternative on air quality are negligible.

TABLE 1

Winnett School District Furnace System Air Pollutant Emissions

(Pounds per Year)

	Volatile Organics

	Particulate Matter	Sulfur Dioxide1	Sulfur Trioxide1	Gaseous Sulfur2	Sulfur Oxides2	Carbon Monoxide	Nitrogen Oxide	Non-Methane	Methane
Fuel Oil System Measured Usage	18	510	7	N/A	N/A	45	100	3.05	1.94
Fuel Oil System Predicted Usage	21	584	8	N/A	N/A	51	206	3.50	2.22
Coal-Fired System Predicted Usage	1012	N/A	N/A	886-22143	987-24673	379	474	4.43	1.90

1 Based on average value of 0.4 weight percent sulfur from Exxon, Billings, Mont

2 Based on range of 0.4 to 1 weight percent sulfur (Slagle and others, 1986).
N/A = Not Applicable.

3 The range in predicted emissions of gaseous sulfur and sulfur oxides is due to

variability in the sulfur content of the coal to be burned.

5.2 Ecological Resources

The proposed action is unlikely to have any adverse impacts on protected species, as documented in a letter from the Montana State Office of the U.S. Fish and Wildlife Ser (see Appendix B). Implementing the proposed action would not affect any natural areas wildlife habitats. No vegetation would be cleared during the proposed action's constr phase. No endangered or threatened species would be affected during the proposed acti construction or operational phases. No disturbance to wildlife resulting from constru or operations noise is expected due to the location of the site. Construction activit would not affect wildlife life cycles adversely.

Under the No Action alternative, there is not likely to be any impact on ecological resources, as no modification of the present facility would be necessary until the agi school boiler had to be replaced.

5.3 Water Quality

The nearest surface waters to the site are Mc Donald Creek and an irrigation ditch, ne of which cross the site of the proposed action and, in fact, are each as far away from site as half a mile. Further, if any coal or ash were to spill during loading/unloadi operations, amounts are expected to be extremely small and inconsequential. Because t parking lot surrounding the area of the proposed action is gravel, no changes in storm runoff quantity or quality are expected as a result of the proposed action.

Similarly, the proposed action would have no impact on area groundwater quality. Coal ash storage in closed containers, as well as the expected small and inconsequential am of any accidental coal or ash spillage, effectively would eliminate the danger of leac entering local groundwaters.

Water for the heating system presently is and would continue to be obtained from a pub well owned and operated by the City of Winnett. The current system requires an averag roughly 4,600 liters/year (1,220 gallons/year) of water; the proposed action would req roughly 3,575 liters (945 gallons/year) of water.15 Because the proposed action utili closed-loop boiler system, unused condensate is recycled through the system, resulting effluent discharge.

Under the No Action alternative, there would most likely be no changes in local water quality, as the present system would remain in operation. However, an accident or ext weather circumstance that damages the above-ground storage tank may release oil into l groundwater or surface waters, negatively impacting local water quality.

5.4 Floodplains and Wetlands

Neither floodplains nor wetlands would be affected by the proposed action or the No Ac alternative.

5.5 Waste Management

All construction debris from the proposed action would be disposed of in accordance wi Montana solid waste disposal regulations which implement federal requirements codified CFR 261.4(b)(4).

The proposed action would generate no hazardous wastes.16 Assuming an ash content of percent of the total coal volume and using the District's predicted burning of roughly metric tons/year (63.5 tons/year of coal), the proposed system would produce just over metric tons/year (6 tons/year) of coal ash. The Montana Solid and Hazardous Waste Pro (ARM 16.4.401 and 16.4.501, et seq.), approved by the EPA, approves of disposal of thi of material in a Class II landfill, typical of the municipal solid waste landfills fou

Montana. Coal ash from the proposed system, along with other solid wastes generated i Winnett, would be disposed of in a landfill located in Lewistown, 87 kilometers (54 mi west of Winnett. This landfill has over thirty years of use remaining. It serves a l area, of which the county of Winnett contributes a small (but not calculable) fraction waste. The School proposes to contract with the city of Winnett for management of thi In addition to recycled item for road construction, as a cement component) is under consideration, with marketability of the ash as the primary limiting factor to this alternative. Under the No Action alternative, no hazardous wastes would be generated construction would be required.

5.6 Land Use

Land use impacts of the proposed action would be minimal due to the present uses of th and the limited localized area of disturbance. Following construction of the maintena shed housing the proposed coal-fired boiler system, the area around the building would to its original use as a parking lot. Roughly 0.02 hectare (0.05 acre) of the present parking lot would be used for the new facility.

Under the No Action alternative, there would be no land use impacts, as the current la of the area would not be changed.

5.7 Visual and Recreational Resources

Upon completion of the proposed action's construction phase, the final appearance of t maintenance shed would be consistent with existing school buildings and the character neighborhood surrounding the school. The proposed action would not impact on existing recreational areas. The only recreational area affected is the elementary school's re yard. As illustrated in Appendix A, Figure 3, the yard and its facilities are on the

and northwest sides of the complex. The proposed action would be accomplished in the lower (southeast) portion of the parking lot. An existing building not part of the pr action effectively would block views of the proposed action from the far side (element school portion) of the recess yard. While within line of sight of the proposed action closest components of the recess yard, a basketball court and a log gym set, are separ from the location of the proposed action by the parking lot proper and should not be a by the additional structure. There are no other public or private recreation sites or on the site that could be affected by the proposed action.

Under the No Action alternative, there would be no further impacts on existing recreat areas, as the appearance of the school area would not be changed.

5.8 Historic and Archaeological Resources

As there are none in the vicinity, both the proposed action and the No Action alternat would have no impact upon historic or archaeological resources, including Native Ameri burial grounds or sacred use sites.

5.9 Socio-economics

It is not anticipated that there will be any socio-economic impacts resulting from implementation of the proposed action. Construction would require an estimated work f of three to four workers to be employed for roughly two months. These jobs would have small short-term benefit to the area, but no significant changes in area economic, hou or infrastructure conditions are expected. Increased traffic volume can be accommodat easily by the existing transportation network.

Operation of the proposed new boiler system would result in the creation of no new per jobs. The most significant benefits would be reduced energy costs to the District and increased demand for local coal.

Under the No Action alternative, there would be no socio-economic impacts, although an employment that might occur under the proposed action would be foregone.

It is not anticipated that there will be any environmental impacts on those Indian Reservations located in the eastern half of the State. Prevailing winds in Winnett ar the north and dispersion is rated as generally good. The Crow and North Cheyene India Reservations, located south of Winnett, are approximately 150 miles south are not expe to be impacted due to the distance and good wind dispersion.

5.10 Noise

Increased sound levels would be generated during construction activities associated wi proposed action. The nearest residence is roughly 60-90 meters (200-300 feet) from th Because of the limited construction activities, the nature of the site and the distanc residences, the net increase in noise attributable to construction would be impercepti Further, any construction activities would be limited to standard working hours.

Once operational, noise would be at imperceptible levels to surrounding residences. W place noise exposure from the proposed action would be in compliance with all applicab regulations.

Under the No Action alternative, there would be no additional noise impacts beyond tho already occur at the site.

5.11 Safety and Health

No negative impacts to the public, the school population, or those living in proximity

school are expected to result from the proposed action or the No Action alternative. proposed action, any potential exposure of workers or school staff or children to haza *would be minimized by a combination of engineering controls and safe work practices an* procedures.

5.12 Transportation

It is expected that the proposed action would generate a relatively insignificant amou increased vehicular traffic during either its construction or operational phases, as discussed further below. Further, because of low traffic projections, motor vehicle emissions would be insignificant.

Construction activities could result in an estimated increase of 3 to 4 vehicles daily small increase in traffic volume can easily be accommodated by the existing transporta network.

Because operating the proposed coal-fired boiler would create no new permanent jobs, t traffic impacts would be those associated with shipments of coal from Roundup to Winne Using 10-ton trucks, it is expected that the proposed action would require less than 1 shipments/year of coal. Even fewer shipments of ash are projected, specifically, less 2 shipments annually. This small increase in traffic volume of 4 to 5 shipments/year the present total of 5-6 oil shipments easily can be accommodated by the existing transportation network.

Under the No Action alternative, there would be no transportation impacts, as no const is required and there are only 5-6 shipments of oil to the site per year.

6.0 LIST OF PERSONS/AGENCIES CONSULTED

- o United States Environmental Protection Agency
- o United States Fish and Wildlife Service
- o Montana Department of Health and Environmental Sciences
  - Air Quality Bureau
  - Solid and Hazardous Waste Bureau
  - Water Quality Bureau
- o Montana State Library
  - Natural Resource Information/National Heritage Program
- o Montana Department of Fish, Wildlife and Parks
- o Montana State Historic Preservation Office

7.0 REFERENCES

1. Garvin, W. H., et. al., Technical Assistance Report of Buildings Energy Consumption Conservation for Winnett Elementary School District #159 in Winnett, Montana, Garvi Engineering, Inc., Helena, Montana (1988; revised 1989 and 1990).
2. Drake-Gustafson Associates, P.C., and Energy Conservation Consultants, Final Techni Assistance Report, Winnett Public Schools, Winnett, Montana, Billings, Montana (199
3. Energy Conservation Consultants, Winnett School, Winnett, Montana, Coal-fired Boile Study, Technical Assistance Update, Billings, Montana (1992).
4. Personal communication with Ms. A. E. Hudson, Environmental Specialist, Montana Department of Health and Environmental Sciences, with Mr. M. Koch, Superintendent, Winnett Public Schools (1992).
5. Grant Agreement No. ICP-92-7082 between the Montana Department of Natural Resources Conservation and Winnett School District No. 1 and No. 159, incorporating U.S. Department of Energy ICP Grant No. DE-FG48-92E803704 (July 1992).

6. Ritteirott, R.T., Inspection Report for the Winnett School District, Winnett, Monta (May 1992).

7. Personal communication between Mr. M. Hines, Montana Department of Natural Resource and Conservation, and Mr. M. Meyers, Lewistown Propane Company (1993).

8. Geothermal Resources of Montana, Map compiled by J. L. Sonderegger and R. N. Bergantino, Montana Bureau of Mines and Geology, Map Scale 1:1,000,000 (1981).

9. Montana Air Quality Data and Information Summary for 1988 and 1989, Montana Air Qua Bureau, Helena, Montana (1991).

10. Personal communication between Mr. K. Hart, Montana Department of Natural Resource Conservation, and Mr. M. Golz, Environmental Specialist, Public Water Supply Progra Water Quality Bureau, Montana Department of Health and Environmental Sciences, Hele Montana (1993).

11. Programmatic Memorandum of Agreement among the United States Department of Energy, National Conference of State Historic Preservation Offices and the Advisory Council Historic Preservation (June 7, 1984)

12. U.S. Environmental Protection Agency, Vegetation Effects of Coal-fired Power Plant prepared by I.J. Hindawi, Corvallis Environmental Research Laboratory (CERL-005) (1976).

13. U.S. Environmental Protection Agency, The Environmental Impact of a Coal-fired Pow Plant, 6th Interim Report, Colstrip, Montana, E.M. Preston, D.W. O'Guinn, and R.A. Wilson, eds., Corvallis Environmental Research Laboratory (1980).

14. Oak Ridge National Laboratory, Trend '90 - A Compendium of Data on Global Change, Carbon Dioxide Information Analysis Center (1990).

15. Personal communication between Mr. M. Hines, Montana Department of Natural Resourc and Conservation, and Mr. J. Pease, Maintenance Supervisor, Winnett School District (1993).

16. U.S. Environmental Protection Agency, "Additional Information on Wastes Studied in Report to Congress on Wastes from the Combustion of Coal by Electric Utility Power Plants," 58 FR 8273 (1993).

17. Phone conversation with Sandy Mantiella, owner/operator of Lewiston, Montana landf that receives Winnett's solid waste (January 12, 1994).

APPENDIX A

Figure (Figure 1: State Map)

Figure (Figure 2: City of Winnett Map)

Figure (Figure 3: Site Map)

APPENDIX B

United States Deparanent of the Interior

FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES
lOO NORTH PARK, SUITE 320
HELENA HT 59601

M.42 DNRC
Winnett School District

June 28, 1993.

RECEICED

JUL 061993

DNRC

Mr. Kevin Hart
Environmental Program Manager
Department of Natural Resources
and Conservation
P.O. Box 202301
Helena, Montana 59620-2301

Dear Mr. Hart:

This responds to your letter dated May 4, 1993, concerning the Winnett School Boiler Project. As requested, we have reviewed your list of threatened or endangered wildlife species and based on the information contained in your letter and the nature and location of the proposal, we concur in your conclusions that the proposed project is not likely to adversely affect threatened or endangered species.

Sincerely,

Dale R. Harms
State Supervisor
Montana State Office

APPENDIX C

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION

MARC RACICOT, GOVERNOR

LEE METCALF BUILDING
1520 EAST SIXTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406)444-6699

PO BOX 202301

TELEFAX NUMBER (406)444-6721 HELENA, MONTANA 59620-2301

May 4, 1993

Dale Harms, State Supervisor
U.S. Fish and Wildlife Service
Federal, Building, U.S. Courthouse
P.O. Draver 10023
Helena, MT 59626

Dear Hr. Harms:

This agency is assisting the yinnett Public School District-to obtain final approval for federal grant funds (Grant No. DE-FG-92E803704) under the U.S. Department of Energy (DOE), Institutional Conservation Program (Public Lao 95-619). As part of the final grant approval, we are assisting the school district to finalize an environmental assessment (EA) to be submitted to the Office of NEPA Oversight within DOE. The EA should contain documentation of consultation with your office regarding this project.

Winnett, Montana is located about 55 miles east of Lewistoon on U.S. Highvay 200. I have enclosed a map of Winnett to show you the location of the school, buildings within the city limits. Also enclosed is an illustration of the school grounds indicating about where the proposed project activity would occur in relation to the existing buildings. The federal grant would be used to cost-share the replacement of an aging fuel oil-fired boiler with an newer more energy efficient coal-fired one. All site vork, as described later, would be performed on the school grounds located within the city of Winnett.

The proposed project would consist of the following actions:

1) purchase and construction of a prefabricated steel building on an

empty.portion of the school''s gravel parking lot';
2)purchase of new boiler (estimated boiler size is 1.5 million Btu per hour), necessary piping, and heat exchanger;
3) purchase of storage bins for coal and ash; and
4) installation of the new system in the proposed building and connecting the new boiler with the adjacent school buildings through underground steam pipes.

An estimated work crew of 3 to 6 persons would be required for a construction period of 1 to 2 months. Winnett has adequate services to accommodate workers if they were to travel from outside the local area for this job.

Threatened or Endangered Wildlife Species
Considered for the Winnett School Boiler Project.

Bald Eagle (HaIiacetus leucocephalus)
American Perigrine Falcon (Falco peregrinus anatum)
- These two species may occasionally,migrate through the area surrounding the project site. No locations of nests or other critical habitat is known to occur in the 1 mile area surrounding Winnett.

Black-Footed Ferret (Mustela nigripes)
- The 18st documentation of a live wild ferret in Hontana was made in 1977. The top three reintroduction sites for the ferret in Montana are, all outside (50 to 60 mi!es north) of the proposed project area. The project site and surrounding area 1 mile out from the site do not contain prairie dog habitat.

Whoooing Crane (Grus americana)

- No sightings of whooping crane have been recorded near by the project location. The site of the proposed work does not contain crane habitat although some habitat may occur along McDonald Creek located 1/4 mile to the south and east of Winnett. The proposed project would not affect this habitat.

Least Tern (Sterna antillarum)

Piping Plover (Charadrius melodus)

- Documented and recorded nesting habitat for both these species exists in portions of northeastern,Montana. The nearest reported sighting of either species has been along Fort Peck Reservoir some distance away (50 to 60 north) from the project site. Neither the project site nor the surrounding area contain suitable habitat for these species.

Page 2

May 4, 1993

As part of the analysis conducted, we obtained information from several sources regarding presence or absence of threatened or endangered species or heir habitats in this area of Montana. Information from the Montana Natural Heritage Program at the State Library indicates that there are no known occurrences of sensitive species or critical habitat within 1 mile of the city of Winnett. Consultation with the Montana Department of Fish Wildlife and Parks confirmed data we had available from aerial photographs, on-site visits, and pub!ished sources of species distribution that the proposed project is not likely to adversely affect any threatened or endangered species of wildlife, fish, plants, or any known habitat. I have included a list of the classified wildlife species we considered as part of our process.

With this letter we seek your concurrence that, the proposed

project is not likely to adversely affect species or habitat in Montana protected through the Endangered Species Act of 1973, as amended.

Please feel to call or write me if there are questions or additional information that I can provide. I can be reached at 444-6795 in Helena. Thank you for your attention to this matter.

Sincerely,

Kevin Hart
Environmental Program Manager
Energy Division

KJH/jb
c: - Steve Oddan, USFWS, Billings
Attachment

DEPARTMENT OF ENERGY

PROPOSED FINDING OF NO SIGNIFICANT IMPACT FOR THE WINNETT SCHOOL DISTRICT BOILER REPLACEMENT PROJECT

AGENCY: Department of Energy

ACTION: Proposed Finding of No Significant Impact

SUMMARY: The Department of Energy (DOE) has prepared an Environmental Assessment (Assessment), DOE/EA-0923, to identify and evaluate the potential

environmental impacts of a proposed action to replace the Winnett School District (School) complex's existing oil-fired heating system, located in Winnett, Montana, with a new coal-fired heating system, using funds provided from a grant under the Institutional Conservation Program. The proposed action would be a more efficient system; and would not have significant impacts on human health and the environment.

Requests for copies of the Assessment should be addressed to:

Ms. Marian Downs
Denver Support Office
U. S. Department of Energy
2801 Youngfield St.
Suite 380
Golden, CO 80401-226
(303) 231-5750 Ext. 129

FOR FURTHER INFORMATION CONTACT: For further information on the proposed project, contact Marian Downs at the above address. For further information on the Department's general NEPA procedures, contact:

Ms. Carol Borgstrom, Director
Office of NEPA Oversight (EH-25)
U.S. Department of Energy
1000 Independence Avenue, S. W.
Washington, DC 20585
(202) 586-4600 or leave a message at (800) 472-2756

SUPPLEMENTARY INFORMATION: The school complex lies within the city of the city of Winnett. The property occupies just over 0.8 hectares (2.1 acres); the total area of the building complex is just over 2,925 square meters (31,502 square feet). The estimated remaining useful life of the complex is 40 years.

Under the present school heating system, the elementary school building is

heated by an oil-fired hot-water boiler; this boiler is approximately 20 years old and is at the half-way point of its useful life. The high school and its adjoining shop are heated with steam supplied by another oil-fired boiler; this boiler is roughly 40 years old and nearing the end of its useful life. Both boilers have relatively low combustion efficiencies, and the coal-fired system would improve upon this. The existing boilers were fueled by oil stored in an on-site underground storage tank (UST) which leaked fuel oil into the soil. The contaminated soil and UST were removed, but as a result the WSD has had to set up a temporary above-ground storage tank to supply the boilers.

PROPOSED ACTION: The proposed action would involve the cost-shared purchase and installation of a coal-fired heating system. The proposed coal-fired system would be a completely self-contained, closed-loop system. The proposed action would involve the following activities.

- Purchase and install a 1.5 million Btu/hr-input, low-steam coal-fired boiler, heat exchanger, and piping necessary to connect the new boiler to steam lines in the school complex.
- Purchase and erect a 204-square meter (2,200-square foot) prefabricated metal maintenance shed to house the new boiler system and for the school maintenance equipment. This shed would be constructed on the school complex's existing gravel parking lot.
- Purchase a covered bin for coal storage.
- Purchase a covered, wheeled bin for temporary storage of coal ash pending its pick-up for disposal.
- Encapsulate and seal the present oil-fired boiler and associated equipment under asbestos abatement measures codified at Administrative Rules of Montana (ARM) 16.42.321.

The school would obtain sub-bituminous coal from a mine located near Roundup, Montana, about 72 kilometers (45 miles) south of Winnett. Coal is advantageous because it is available nearby, provides a high Btu value at low

cost, and can be stored in greater quantities than oil. The main disadvantage of a coal-fired system would be an increase in air emissions and the generation of bottom ash waste requiring disposal.

The new boiler system would be installed in a 204-square meter (2,200-square foot) metal shed to be erected on unused portions of the school complex's existing gravel parking lot. Upon completion of the shed and installation of the proposed new boiler system, the area around the building would revert to its original use as a parking lot.

ENVIRONMENTAL IMPACTS: The proposed action would occur in an existing, previously developed area and would not affect wetlands, floodplains, threatened or endangered species or their habitats, or historical or archeological resources. Significant construction activities would not be required and there are no anticipated socioeconomic effects. Also, it is not anticipated that there will be any environmental impacts on thos Indian reservations located in the State.

A review was conducted by the Montana Department of Natural Resources and Conservation cooperatively with the Air Quality Bureau of the Montana Department of Health and Environmental Sciences under the Montana Air Quality program, as approved by teh Environmental Protection Agency. The review compared emissions of the existing oil-fired system with those of the proposed coal-fired system. The present system emits 18 pounds of particulate matter, 510 pounds of sulfur dioxide, 7 pounds of sulfur trioxide, 45 pounds of carbon monoxide, 100 p0unds of nitrogen oxide, 3.05 pounds of non-methane hydrocarbons, and 1.94 pounds of methane hydrocarbons annually. The proposed system would emit 1012 pounds of particulate matter, a range of 886-2214 pounds of gaseous sulfur, a range of 987-2467 pounds of sulfur oxides, 379 pounds of carbon monoxide, 474 pounds of nitrogen oxide, 4.43 pounds of non-methane hydrocarbons and 1.90 pounds of methane hydrocarbons. This review indicated that air emissions from the proposed action would be greater than

those currently released by the oil-fired system. However, the proposed action's projected emissions would be far below present ambient air quality standards. The proposed coal-fired boiler's close-loop system would prevent additonal air quality impacts. The proposed project would release less than 180 tons/yr of carbon dioxide, which would be insigificant in terms of the overall combustion of fossil fuels and emissions of carbon dioxide by all fossil-fueled devices. While the proposed action would be a new source of air emissions, the amounts generated would not require review under Montana air quality permit requirements which implement the Federal and Montana Clean Air Acts (ARM 16.8.1101 - 16.8.1118). Emissions from the proposed action, in combination with other sources, would neither cause nor contribute to violations of Montana Ambient Air Quality Standards. During construction, there would be emissions of small quantities of fugitive dust or occasional smoke. All emissions are expected to be small in quantity and limited in duration.

Water for the heating system is and would continue to be obtained from a public well owned and operated by the City of Winnett. The proposed action utilizes a closed-loop boiler system, where unused condensate is recycled through the system, resulting in no effluent discharge.

The proposed action would generate no hazardous wastes. All construction debris from the proposed action would be disposed of in accordance with Montana solid waste disposal regulations which implement federal requirements codified at 40 CFR 261.4(b)(4). Coal ash from the proposed system, along with other solid wastes generated in Winnett, would be disposed of in a landfill located in Lewiston, 87 kilometers (54 miles) west of Winnett. The School proposes to contract with the city of Winnett for management of this ash. In addition to landfill disposal, utilization of this ash (e.g., use as a recycled item for road construction, as a cement component.) is under consideration.

Land use impacts of the proposed action would be minimal due to the present

uses of the site and the limited localized area of disturbance. Construction would require an estimated work force of three to four workers to be employed for roughly two months. These jobs would have a small short-term benefit to the area, but no significant changes in area economic, housing, or infrastructure conditions are expected.

Although increased sound levels would be generated during the construction activities associated with the proposed action, the net increase in noise attributable to construction would be imperceptible. No negative impacts to occupational health and safety are expected to result for the proposed action, and the traffic increase would be minor compared with current traffic at the complex.

Upon completion of construction, the final appearance of the maintenance shed would be consistent with existing school buildings and the character of the neighborhood surrounding the school. The proposed action would not affect existing recreational areas. Operation would result in the creation of no new permanent jobs. The most significant benefits would be reduced energy costs to the WSD and an increased demand for local coal.

ALTERNATIVES CONSIDERED: The alternatives to the proposed action evaluated in DOE/EA-0843 were: 1) No Action; 2) Purchase of a New Oil-Fired Boiler; 3) Natural Gas as an Alternative Fuel 4) Propane Gas as an Alternative Fuel; 5) Conversion to Electric Heat; and 6) Conversion to Heating from Solar, Wind, and Geothermal.

The No-Action Alternative would result in the grant application being denied. The potential benefits derived from this system would not be realized under the Institutional Conservation Program, while the school would ultimately need to replace the existing system before it fails. As a result, much greater cost could eventually be incurred by the school. The alternative to purchase a new oil-fired burner was eliminated from consideration for several reasons,

the largest being that coal provides a high Btu value at a lower cost. Using natural gas as an alternative fuel was eliminated because no public utilieties or private firms exist for supplying natural gas to the Winnett area. Using propane gas as an alternative fuel was elimated due to liability and reliability issues, as well as being less cost-effective than coal. Conversion to elecric heat was rejected because of the expense of replacing the entire system and the cost of operating this heating cource. Conversion to heating from solar, wind, and geothermal was examined and eliminated due to limitations in the applications of all three technologies.

DETERMINATION: Based on the analysis in the Environmental Assessment, the Department has determined that the proposed installation of a new coal-fired system at the Winnett School District complex does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the NEPA. Therefore the preparation of an Environmental Impact Statement is not required and the Department is uissuing this Finding of No Significant Impact.

Issued at Washington, D.C., this 3rd day of June, 1993.

Tara O'Toole, M.D., M.P.H.
Assistant Secretary
Environment, Safety, and Health

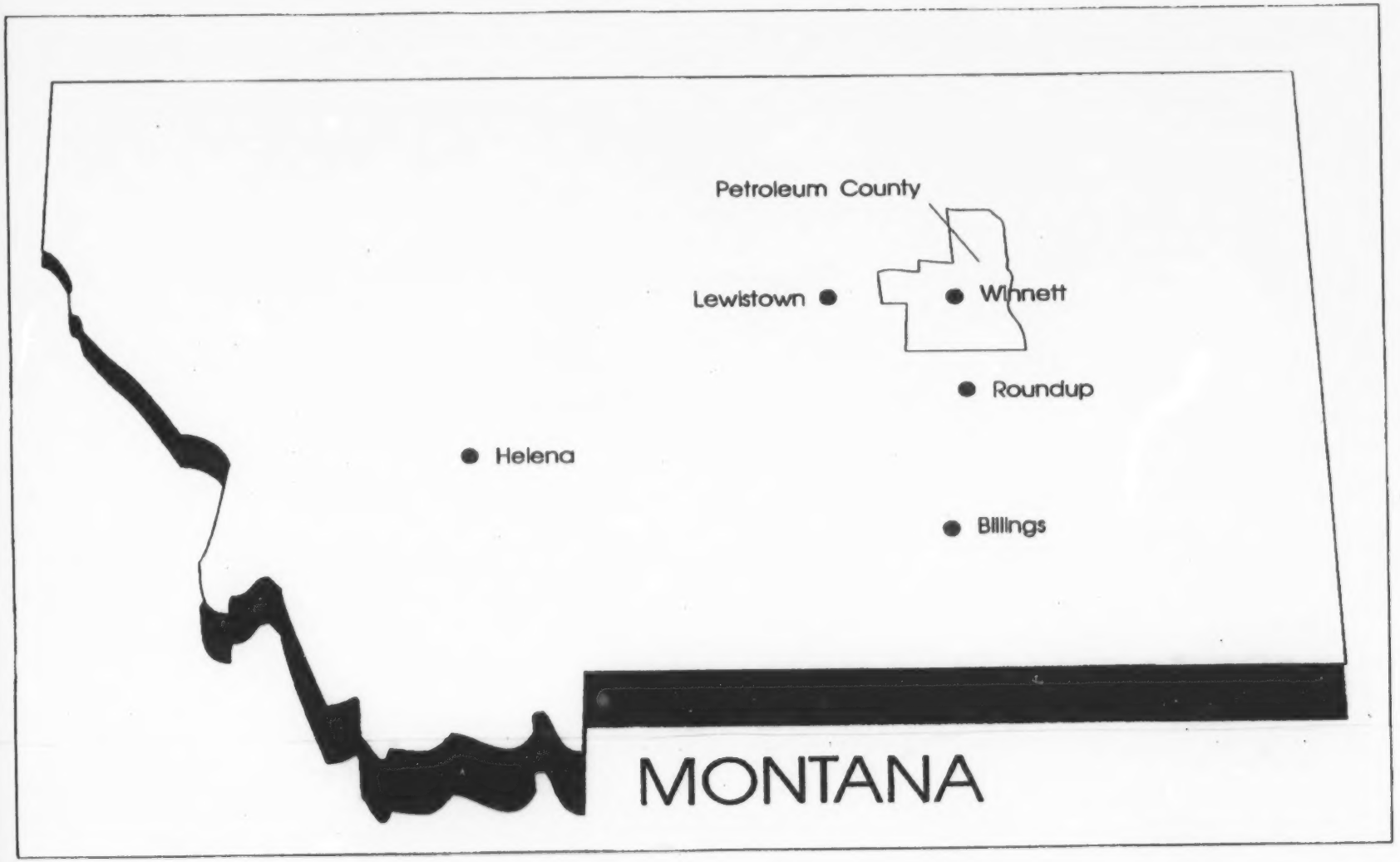

Figure 1: State Map

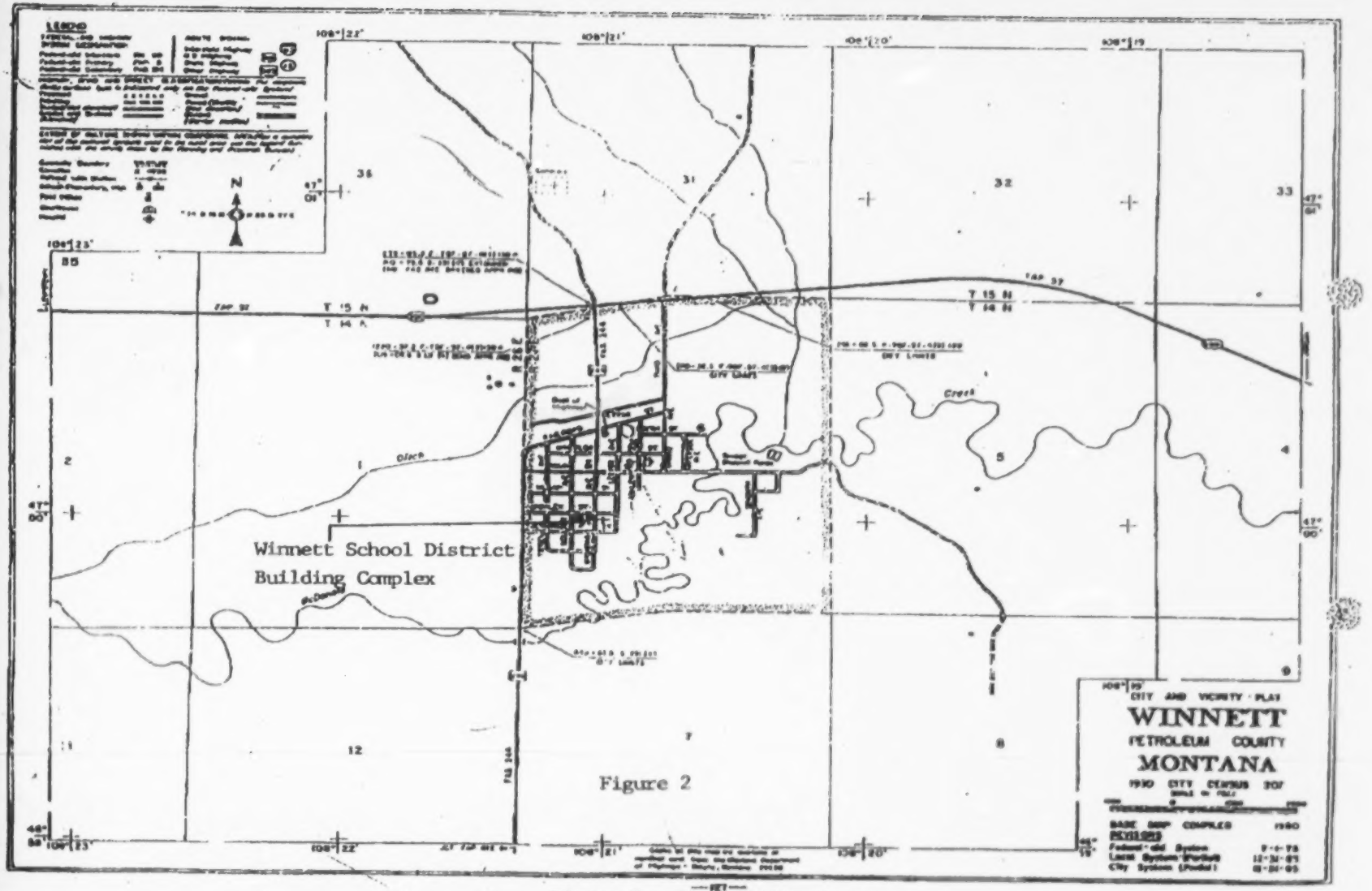

Figure 2: City of Winnett Map

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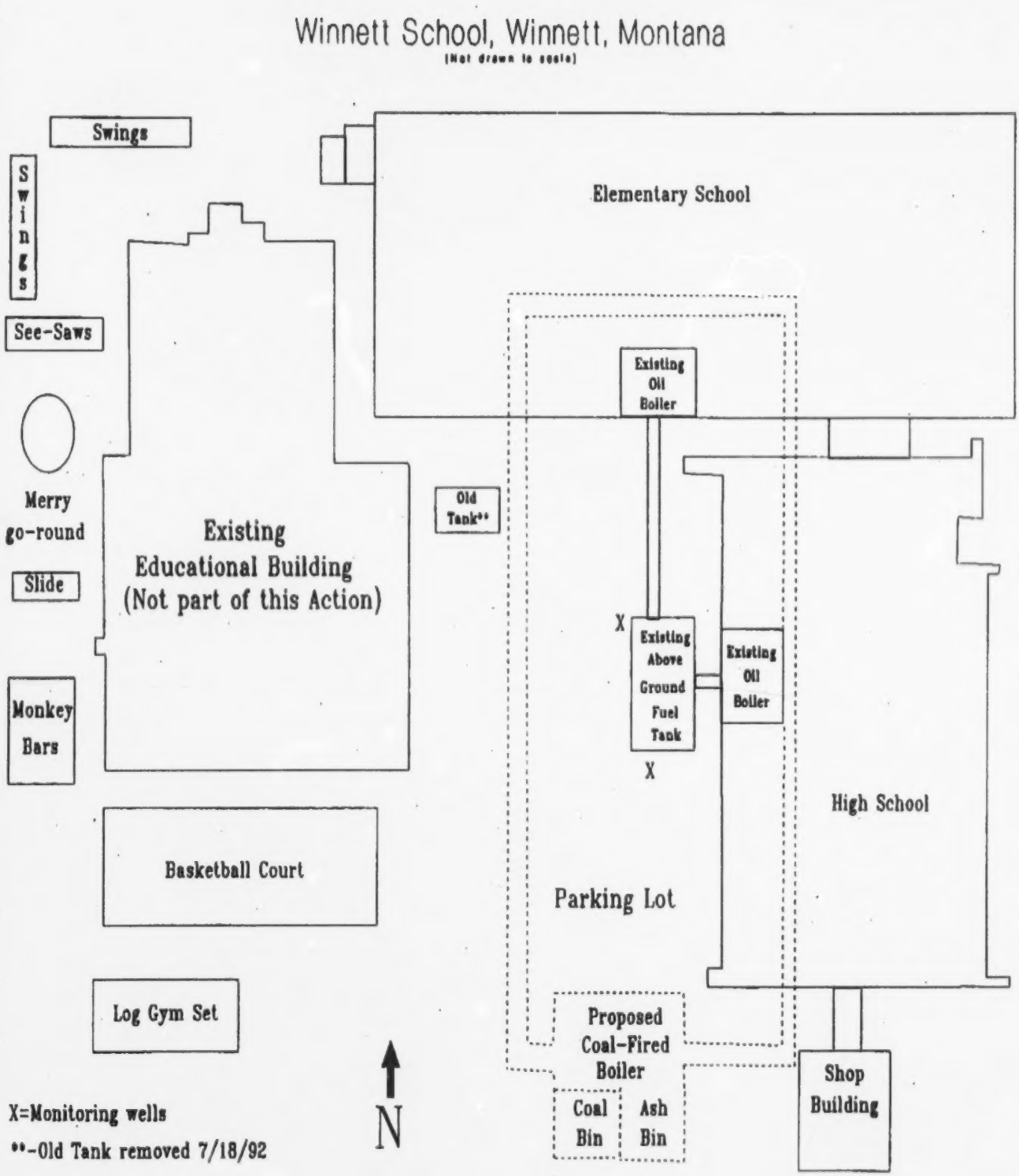

Figure 3: Site Map